

## Abstract

Implantable *in vivo* sensors used to monitor physical, chemical or electrical parameters within a body. The *in vivo* sensors are integral with an implantable medical device and are responsive to externally or internally applied energy. Upon application of energy, the sensors undergo a phase change in at least part of the material of the device which is then detected external to the body by conventional techniques such as radiography, ultrasound imaging, magnetic resonance imaging, radio frequency imaging or the like. The *in vivo* sensors of the present invention may be employed to provide volumetric measurements, flow rate measurements, pressure measurements, electrical measurements, biochemical measurements, temperature, measurements, or measure the degree and type of deposits within the lumen of an endoluminal implant, such as a stent or other type of endoluminal conduit. The *in vivo* sensors may also be used therapeutically to modulate mechanical and/or physical properties of the endoluminal implant in response to the sensed or monitored parameter.